SRNL
SAVANNAH RIVER NATIONAL LABORATORY
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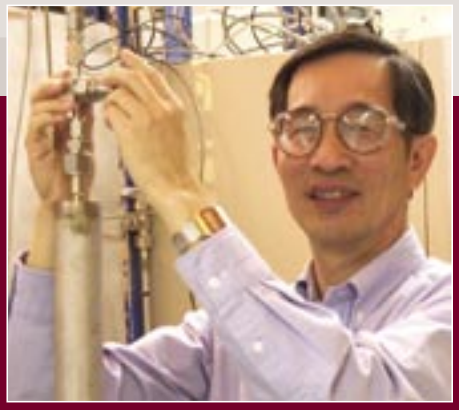


STRATEGIC PLAN 2004

The Programs

A Message From The Director

Our business today requires different approaches than we have used in the past. Accelerated cleanup, changes for defense needs and Homeland Security are all different than just three years ago. Our ability to anticipate change, in fact to be proactive rather than simply react to change, will depend on how well we plan and prepare for it.

This planning document is the culmination of an extensive, critical evaluation of our business forecast and where we want to position ourselves in the future. It establishes specific missions, goals and responsibilities while mapping new strategies to ensure the laboratory's success and continued growth.

Our objective was to "think" systematically and comprehensively about our role in a changing external environment and about our strengths and challenges. In light of these considerations, we have charted a course to make SRNL stronger, of higher quality, and even more responsive to the needs of our customers.

SRNL has entered an era that is testing its well-known ingenuity. As new challenges are faced, SRNL must maintain its fundamental role in generating, applying and integrating technology. Its strategies must lead to sound management of our resources – whether that be the talents, knowledge and creativeness of our staff or the unique instruments and technologies in our laboratory.

Fulfilling our mission requires that SRNL continues to safely conduct the highest quality research and development and successfully apply it to challenges at SRS and in the DOE Complex. It also requires us to identify and pursue opportunities created by new technologies, challenges and ever-changing world developments.

We have identified what we need to do to achieve the preeminence that is our overarching goal. We understand where we need to strengthen ourselves, and we know how we are going to go about making those changes. To achieve our short- and long-term goals, we must have a team willing to expand our potential while holding in clear focus the core values of the laboratory. This strategic plan also identifies where SRNL needs to renew and expand its efforts, while remaining grounded in its mission, vision, and core competencies.

I look forward to the future we have mapped out with this strategic plan as SRNL continues to put science to work.

Dr.. G. Todd Wright
Director
Savannah River National Laboratory

Mission

To meet national and SRS Science and Technology needs

- To build technical capabilities to meet future national needs and future SRS missions
- To provide the R&D vital to the nation that can also stimulate the region's technology-based economy through partnerships with South Carolina and regional universities and collaborations with regional governments

Vision

SRNL is the nation's premier applied science laboratory in National Security, Energy Security, and Environmental Management by delivering world-class, innovative performance for the Department of Energy in National Defense and Homeland Security Technologies, Hydrogen Technology, and Accelerated Cleanup.

SRNL, through its collaborations with the regional universities, has created a virtual R&D center with significant intellectual and economic benefits to the region and the nation.

Core Competencies

- Chemical and Radiochemical Processing
- Environmental Science and Technology
- Analytical Chemistry (Low-level nuclear measurements & highly radioactive samples)
- Engineered Specialty Systems
- Materials Science
- Hydrogen and Tritium Science and Technology
- Sensor Development
- Computational Science and Modeling

Core Values

Customer Satisfaction

We partner with our customers and continually strive to anticipate their requirements, meet their expectations, and enable their success.

People

We value each individual's personal health and safety.

We highly regard each other as business associates and individuals.

We treat each other with respect, courtesy, and honesty at all times.

We appreciate and recognize each other's contributions.

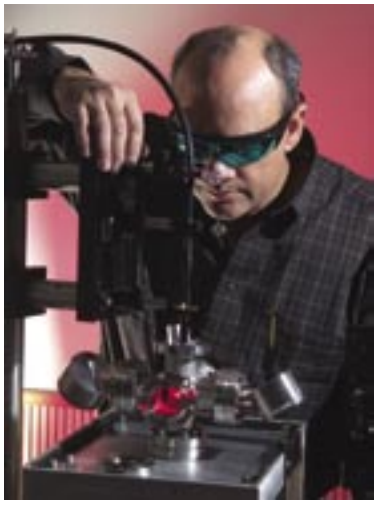
We value the innovative and creative abilities of our people and their sense of ownership and accountability.

Overarching Strategies

Maximize the regional impact of SRNL's capabilities and the laboratory's ability to act as a key enabler for technology utilization.

Objectives	Strategies
Develop an enhanced capability to deliver technology solutions.	• Form southeastern regional alliances with the universities and the regional economic development partnerships. • Provide regular briefings for the leaders in the region. • Develop key growth initiatives for the laboratory.
Build on our core competencies to enhance our position as DOE's premier applied science laboratory.	• Build on our unique role in tritium stockpile stewardship for national defense. • Build on our significant contributions in nonproliferation and international safeguards for national security. • Advance SRNL competence in nuclear materials management. • Apply our unique environmental management (EM) expertise to accelerate EM closure activities at SRS and to assist other DOE sites.
Expand SRNL's contributions to new areas of national need.	• Establish SRNL as a national R&D contributor in hydrogen technology. • Establish SRNL as the lead FBI nuclear forensic laboratory. • Assist the Department of Homeland Security in customs enforcement and border protection. • Develop and build DoD business in niche markets. • Establish a viable nuclear training and research reactor center for the southeast at SRS.
Enhance the stature and reputation of SRNL.	• Continue to work with DOE to move the laboratory sponsorship from EM to another DOE program office. • Provide increased opportunity for SRNL staff to be involved at a national and international level in the appropriate technical societies, advisory boards, peer groups and panels. • Seek to hire nationally-recognized technical staff to aid in strategic business growth .

The successful execution of this plan will ensure the continuation of SRNL core competencies and preserve its heritage as the nation's premier applied science laboratory.



People and Infrastructure

Attract and retain a highly qualified, motivated, diverse, and flexible workforce that is aligned with SRNL business objectives.

Objectives	Strategies
Attract diverse, high-quality personnel.	• Develop incentives to hire diverse, highly-qualified, new and experienced personnel. • Support graduate school attendance and completion. • Expand the post-doctoral research staff.
Promote professional growth.	• Support attendance at technical conferences and developmental courses. • Support membership and leadership positions in technical societies. • Provide development opportunities through assignment changes (internal, external, rotational, temporary, detailee). • Establish nationally competitive technical progression levels. • Maintain adequate, updated resources for R&D (library, computers, information technology support, etc.). • Maintain SRNL's technical staff mentoring program.
Increase workforce flexibility.	• Enhance mechanisms for working with universities and other labs (Work for Others from universities, Memorandums of Understanding with other agencies, etc.). • Streamline business systems to enhance R&D performance.

Ensure an infrastructure that cost effectively supports SRNL business goals.

Objectives	Strategies
Secure infrastructure funds.	• Develop prioritized needs for laboratory upgrades. • Evaluate including capital equipment costs in estimating R&D work. • Look for customers or opportunities that include facility investment and upgrades. • Investigate potential for alternative funding sources. • Investigate different cost collection approaches that support SRNL infrastructure.
Maximize cost-effectiveness of operations.	• Continue to explore cost-effective alternatives that reduce the financial burdens of facility operations. • Develop equipment utilization plan to maximize utilization and lower costs.

Programs - National Security

Defense Programs (Tritium)

- Advance technology to support a responsive and cost effective infrastructure for current and future stockpile requirements.
- Develop improved tritium processes to reduce operating costs.
- Support the successful completion of Defense Program projects (Tritium Facility Modernization and Consolidation, Tritium Extraction Facility, Loading Line Modifications, etc.).
- Establish new SRNL development laboratories inside the Tritium facilities in collaboration with Operations.
- Identify new opportunities for technology development, technology transfer, and business development by building relationships with NNSA and Design Agencies.
- Obtain and retain the multi-disciplined set of competencies through dual-use concepts to ensure the success of the future stockpile.
- Establish a significant role for SRNL in the Modern Pit Facility and related development activities.

Nuclear Materials Management (Pu and Spent Fuels)

- Develop and implement programs to advance plutonium and nuclear materials package development, transportation, storage and surveillance technologies.
- Establish a Center of Excellence for material package and surveillance development.
- Maintain leadership in Interim Wet Basin Storage and Life Management.
- Maintain DOE Complex recognition of SRNL expertise as the DOE Center of Excellence for Aluminum clad fuels.
- Promote National/International Consensus Codes and Standards to ensure “best in class” operation.
- Champion a major SRS Dry Storage /Road-Ready Storage Demonstration/Project initiative.
- Develop and implement treatment technologies for nuclear materials including legacy nuclear materials.
- Provide support to the Office of Civilian Radioactive Waste Management (OCRWM) Science and Technology Program to support the technical basis for Yucca mountain.

Nuclear Nonproliferation

- Assist Nuclear Nonproliferation Project Office (NNPO) in the successful design, construction, startup, and operation of the Pit Disassembly and Conversion Facility (PDCF), Mixed Oxide Fuel Fabrication Facility (MFFF), and Waste Solidification Building (WSB).
- Expand the processing workload for H-Canyon and extend its mission life to disposition nuclear materials that represent a proliferation risk.
- Establish SRNL, through technological successes, as a recognized DOE laboratory vital to the Office of Nonproliferation and National Security programs.
- Provide leading-edge technology to NA-22 to detect and deter proliferation of weapons of mass destruction.
- Broaden the technological relationships with other federal agencies that have need for SRNL’s unique capabilities.
- Establish an increased customer base in the Office of International Material Protection and Cooperation (NA-25).
- Assist NA-20 in implementing the Global Threat Reduction Initiative.

Programs - National Security

Homeland Security

- Establish direct contacts and interfaces in the new Department of Homeland Security (DHS).
- Ensure SRNL is recognized as Lead Laboratory for the DHS Bureau for Immigration and Customs Enforcement and Border Protection.
- Establish a major training effort for Coast Guard agents.
- Train DHS agents and inspectors in Weapons of Mass Destruction (WMD) awareness regionally and at the Federal Law Enforcement Training Center.
- Establish a virtual SRNL organization that will support growth in export control and border protection activities

Nuclear Forensics

- Establish SRNL as the lead investigative laboratory to support the Federal Bureau of Investigation (FBI) involving radioactively contaminated evidence.
- Provide critical support facilities for the FBI nuclear forensic activities.
- Enhance the support of FBI nuclear training needs.
- Gain recognition by the National Institute of Justice as technology leader in law enforcement, critical incident response and public safety assistance.

Defense Technologies

- Develop and build Department of Defense (DoD) business in niche markets, leveraging the breadth of SRNL competencies.
- Build DoD business in the areas of Aging and Life Management of Systems, Structures and Components; advanced materials/processes; Smart Systems and Sensors; and Specialized Performance Testing and Analysis.
- Leverage extensive SRNL expertise in environmental sensors, coatings, and Hydrogen Technology for DoD applications.
- Analyze technology needs within DoD labs and operations which are synergistic with specialized SRNL competencies, e.g., biotechnology, D&D, etc.
- Establish SRNL as a rapid response, applied engineering and technical support partner to DoD Defense Threat Reduction Agency (DTRA).
- Provide continuing engineering development and support to the DTRA Domestic Nuclear Event attribution program.
- Provide rapid engineering responses to Combat Support Operations personnel to develop and deploy tools for use by U.S. ground forces.
- Provide technical assets and solutions for use by DoD Explosive Ordinance personnel responding to suspected nuclear devices.
- Develop and build DoD business in systems development including remote systems, inspection systems, repair systems and field deployable , real-time radiological monitoring systems.

Programs - Energy Security

Hydrogen Technology

- Establish SRNL as a national R&D leader in hydrogen technology and demonstration projects.
- Leverage existing NNSA "dual-use" technology for the growing hydrogen national energy program.
- Develop strategic partnerships with industry, academia and other federal and national labs to promote hydrogen and fuel cell R&D opportunities.
- Support the South Carolina Hydrogen Coalition in fulfilling its mission of growing regional, high-tech jobs in the area of hydrogen technology.
- Obtain more cost-effective, off-site laboratory and office space for non-sensitive, non-radioactive hydrogen technology development programs.
- Continue to explore opportunities with automotive and energy companies to utilize SRNL and SRS hydrogen capabilities and resources.
- Team with energy and auto companies to develop competence in hydrogen generation, distribution, and refueling to give SRNL comprehensive hydrogen capabilities.

Nuclear Energy

- Construct a nuclear training and research reactor at SRS to support the rejuvenation of nuclear education in the U.S..
- Aggressively pursue SRNL involvement in the Nuclear Hydrogen Initiative (NHI).
- Support nuclear education in South Carolina by providing adjunct professors and guest lecturers, and serving on Nuclear Program advisory boards.
- Increase SRNL's role in the Advanced Fuel Cycle Initiative (AFCI) by working with ORNL and key working groups.
- Establish a role in the Space Nuclear Power program.

Clean Energy Technologies

- Maximize the utilization of the intellectual and physical infrastructure at SRNL to assist DOE and EPA in evaluating new technologies for energy independence.

SRNL is a national resource of world-class technical expertise in service to our nation's critical needs.

Programs - Environmental Management

High Level Waste

- Support development of innovative salt processing options to accelerate closure.
- Develop and implement innovative salt sampling and characterization capabilities.
- Support the EPC contractors for the Salt Waste Processing Facility (SWPF).
- Provide technical expertise to support waste retrieval, heel removal, and tank closure goals.
- Enable accelerated tank closure through the development and deployment of effective chemical and mechanical cleaning methods.
- Provide technical bases for regulatory concurrence on tank closures and disposal operations.
- Improve closure program cost and schedule by applying innovative tools and methods derived from external sources (e.g., other sites, commercial vendors, universities).
- Optimize performance for processing future sludge batches in the Defense Waste Processing Facility (DWPF) and implement melter improvements.
- Provide direct support to Saltstone in formulations, processing, modeling and permitting.
- Serve as the lead lab and EM integrator for high level waste treatment technology.
- Continue strong support of the Hanford Waste Treatment Plant (WTP) to position SRNL for future work.
- Provide technical support to Hanford's tank closure efforts including accelerated waste treatment (bulk vitrification and steam reforming).
- Team with Idaho (INEEL) to develop treatment for sodium-bearing waste (SBW).

Soil and Water

- Advance science and technology planning and solutions through the Tech Panel, supporting program enhancements and achieving target and maximum project scope.
- Support large-scale remediation projects at SRS utilizing the breadth of SRNL core competencies.
- Provide scientific basis and technical leadership to advance and integrate cost-effective passive and natural remedial approaches.
- Develop and implement technical strategies and technologies to achieve site NPDES permit requirements.
- Provide science and technology consultation in response to peer review, regulator, and stakeholder technical input.
- Serve as the EM integrator and expand partnering relationships with laboratories and key DOE sites to provide broader support for the EM cleanup mission.
- Develop and obtain DOE support for a comprehensive EcoPark program.
- Establish basic science research program that supports SRNL's applied programs and core competencies.
- Pursue basic science field research center for fluvial and riparian systems.
- Interact with the Environmental Protection Agency (EPA) and state regulators on technology and policy initiatives, and pursue interagency collaborations.
- Develop partnerships and collaborative proposals with the Medical College of Georgia (MCG) and the National Oceanic and Atmospheric Administration (NOAA).

Programs - Environmental Management

Area Closures and D&D

- Assist SRS in achieving accelerated Area closure goals.
- Characterize canyon residues, develop process flowsheets to disposition remaining materials, and deploy innovative remote inspection and sampling equipment.
- Develop protocols for characterization and risk assessment.
- Accelerate SRS D&D schedule and reduce cost by providing technical assistance in characterization, environmental modeling, stabilization, and decontamination technologies.

Solid Waste

- Provide unique expertise to accelerate and lower the cost of disposal of new and existing low-level waste streams.
- Accelerate transuranic (TRU) waste shipments to the Waste Isolation Pilot Plant (WIPP) and reduce costs by providing technical expertise in characterizing, inspecting, qualifying, opening, and repackaging TRU waste.
- Provide characterization and deploy innovative stabilization technologies for hazardous/mixed wastes.

SRNL's core competencies are vital to our nation's future and security.

New SRNL Initiatives

Hydrogen Production Demonstration

To help secure a clean, domestic, hydrogen-based energy economy for the U.S., SRNL proposes to address the technical issues facing the nuclear-hydrogen option as expeditiously as possible. This can best be accomplished for the thermo-chemical (TC) cycles by establishing a program to support the laboratory-scale development efforts that are currently planned as part of the National Hydrogen Initiative. This program would include process modeling and component testing to optimize the flow sheets for the various TC cycles and to support the decision on the cycle selected for the pilot plant. A pilot plant would then be designed to address the key technical issues and perform the necessary development to support the design of the engineering-scale facility that will be coupled to the next generation nuclear plant to be demonstrated at the Idaho National Laboratory in 2016.

Homeland Security Center

To address the growing terrorist threats to the U.S., SRNL propose to establish the Southeastern Applied National Security Center. The Center will operate a forensic facility capable of handling nuclear, radioactive and biologically contaminated evidence. This facility will serve as a resource to the FBI as well as any local law enforcement entity. It will also provide atmospheric or aqueous plume modeling, emergency response vehicles, and robots to respond to any regional emergency, accidental or terrorist. Assessments will be provided to ports in the Southeast to help protect them against terrorist attacks or smuggling of WMD. In this leadership role, SRNL will provide necessary information to the universities about the technology needs of all Federal agencies protecting the Southeast United States and then work with the universities and with private sector inventors to test, evaluate and commercialize new technologies. In addition, the Center would serve as the Validation Standard Center for Homeland Security Technologies

Research Training Reactor

To support the nuclear program that is expected during the first half of the 21st century, SRNL and its Southeast Universities Nuclear Reactors Institute for Science and Education (SUNRISE) Consortium partners are proposing a next generation research reactor at SRS to serve the University community. The proposed SUNRISE reactor will be a modern facility producing enough core energy that it will not duplicate research possible at existing research reactors. It will be based on evolving technology to support advanced nuclear energy initiatives such as the next generation nuclear plant (NGNP), which is the flagship of DOE's advanced nuclear energy program. The SUNRISE will provide facilities for neutronic and operational studies, high temperature materials and component testing, and training facilities for the future workforce to support the nuclear resurgence. Also, it will be designed to support the research needs of the space nuclear program that is slated for significant funding in the coming years to support space exploration as well as small-scale radioisotope production.

Ecological Park

Designation of the SRS as the first National Environmental Science and Research Park would establish the site as a Center of Excellence and User Facility for environmental cooperative research involving government, university and private sector scientists. Integration of this research with selected environmental research sponsored by the Department of Energy (DOE), the Environmental Protection Agency, Department of Agriculture, NASA, and the National Science Foundation will significantly enhance the stature of the DOE and SRS, as well as extending the impact of the DOE investment. Initial projects would focus on current and emerging environmental issues associated with existing and innovative energy technologies, taking advantage of SRNL and SREL's technical expertise, and the abundance of natural (managed and disturbed) ecosystems at the SRS.

Virtual Process Chemical Simulation Center

SRNL proposes to establish a Computational Science Center to conduct applied simulation of materials. This Center would aid in the integration of Smart Materials technology across multiple government agencies. In addition, this Center would conduct research into the use of molecular simulation to accelerate laboratory chemistry research.

SRNL

SAVANNAH RIVER NATIONAL LABORATORY

We Put Science To Work

Operated by Westinghouse Savannah River Company

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